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Contaminant Sources and Toxicity in the Cache Slough Region

Abstract: Monitoring of the water column in the Cache Slough region showed frequent toxicity to the amphipod, Hyalella azteca. The affected area extended from the upper end of Cache Slough, down to the lower reaches of Lindsay Slough, but did not extend into Liberty Island or the Deep Water Ship Channel. Toxicity was consistently observed after rain events, but was never observed during dry periods. Further investigation indicated the cause was usually the pyrethroid bifenthrin. Investigation of many potential sources to the Cache Slough complex indicated that most commonly, the bifenthrin originated as storm runoff from the City of Vacaville, and traveled approximately 12 miles down the length of Ulatis Creek to reach Cache Slough. While the principal threat to Cache Slough appears to be urban runoff, bifenthrin-related toxicity from this source was occasionally compounded by local agriculture-derived inputs of the pyrethroid lambda-cyhalothrin and the organophosphate chlorpyrifos.

Statement of Relevance: Given the importance of the Cache Slough region for delta smelt and other species, this work is intended to better understand the threat contaminants might pose to important invertebrate prey species.